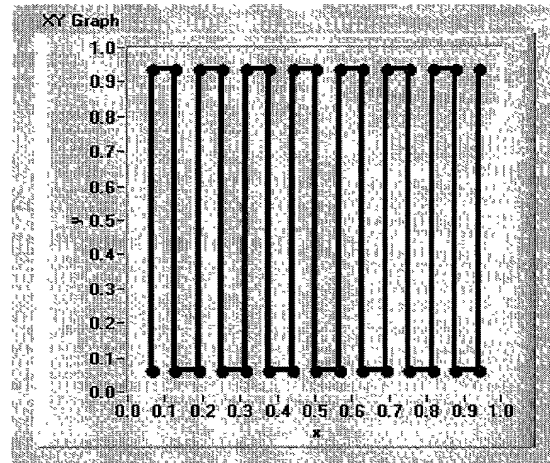


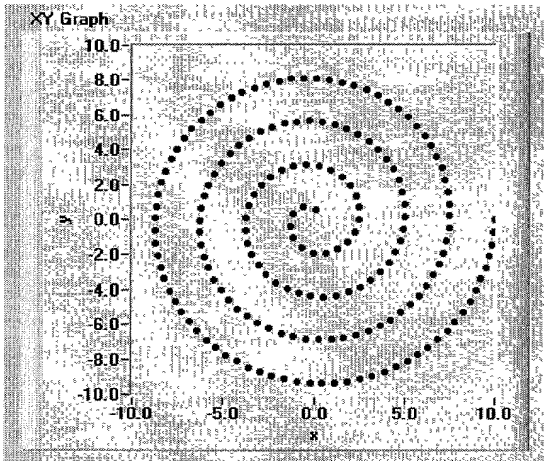
Approximated Peano Curve. The space-filling process has not been completed.

Figure 1A (Prior Art)



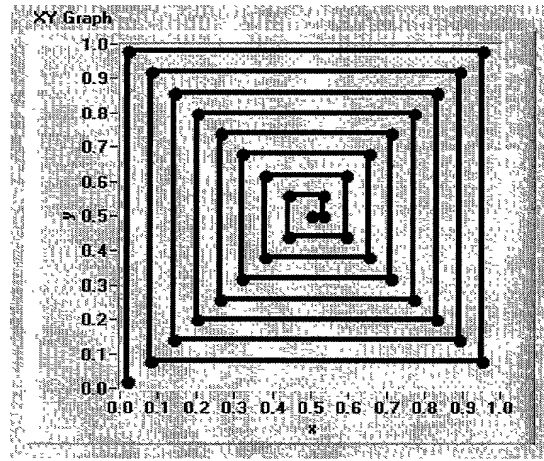
Boustrophedon Path

Figure 1B (Prior Art)



Archimedes Spiral defined by equally distributed points

Figure 1C (Prior Art)



Spiral-like line-based scanning

Figure 1D (Prior Art)

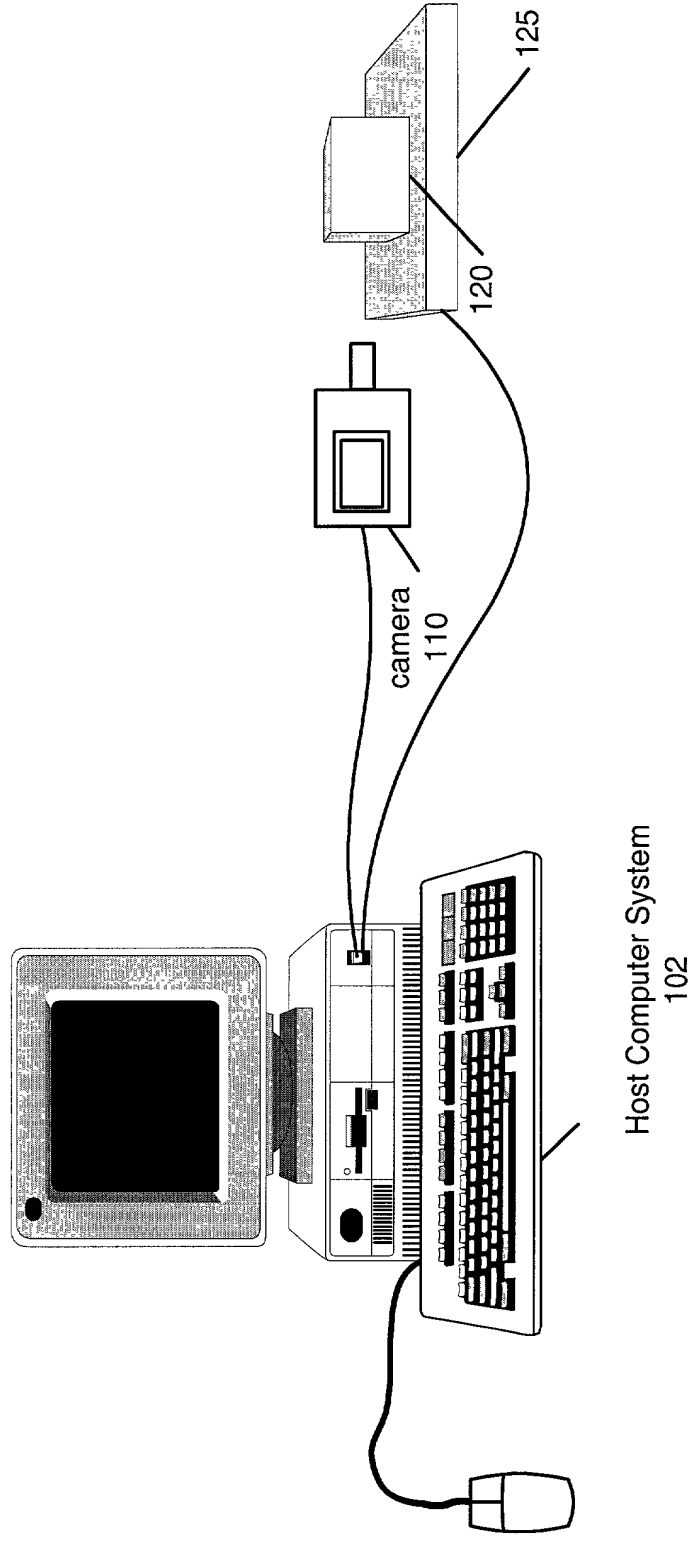


Figure 2A

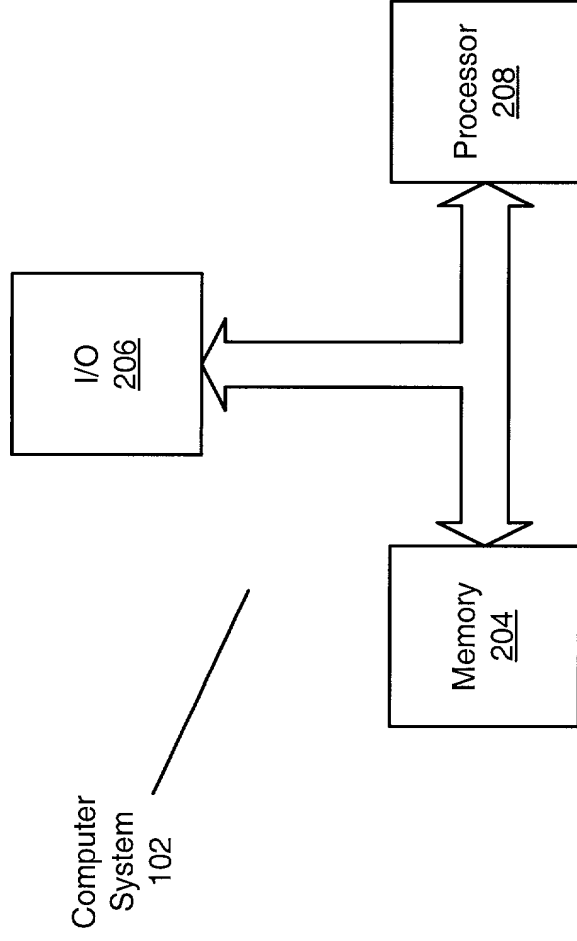


Figure 2B

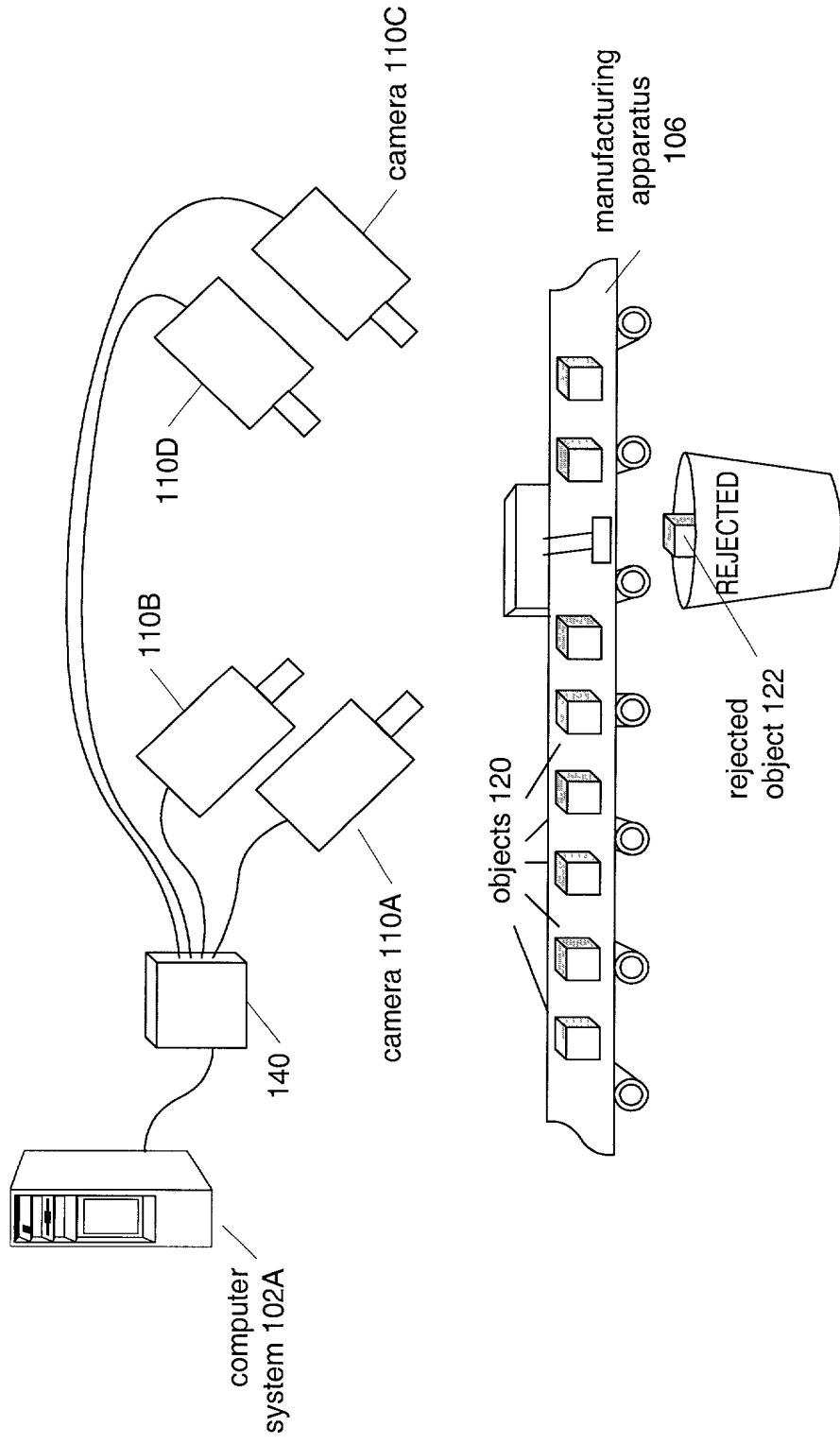


Figure 3A

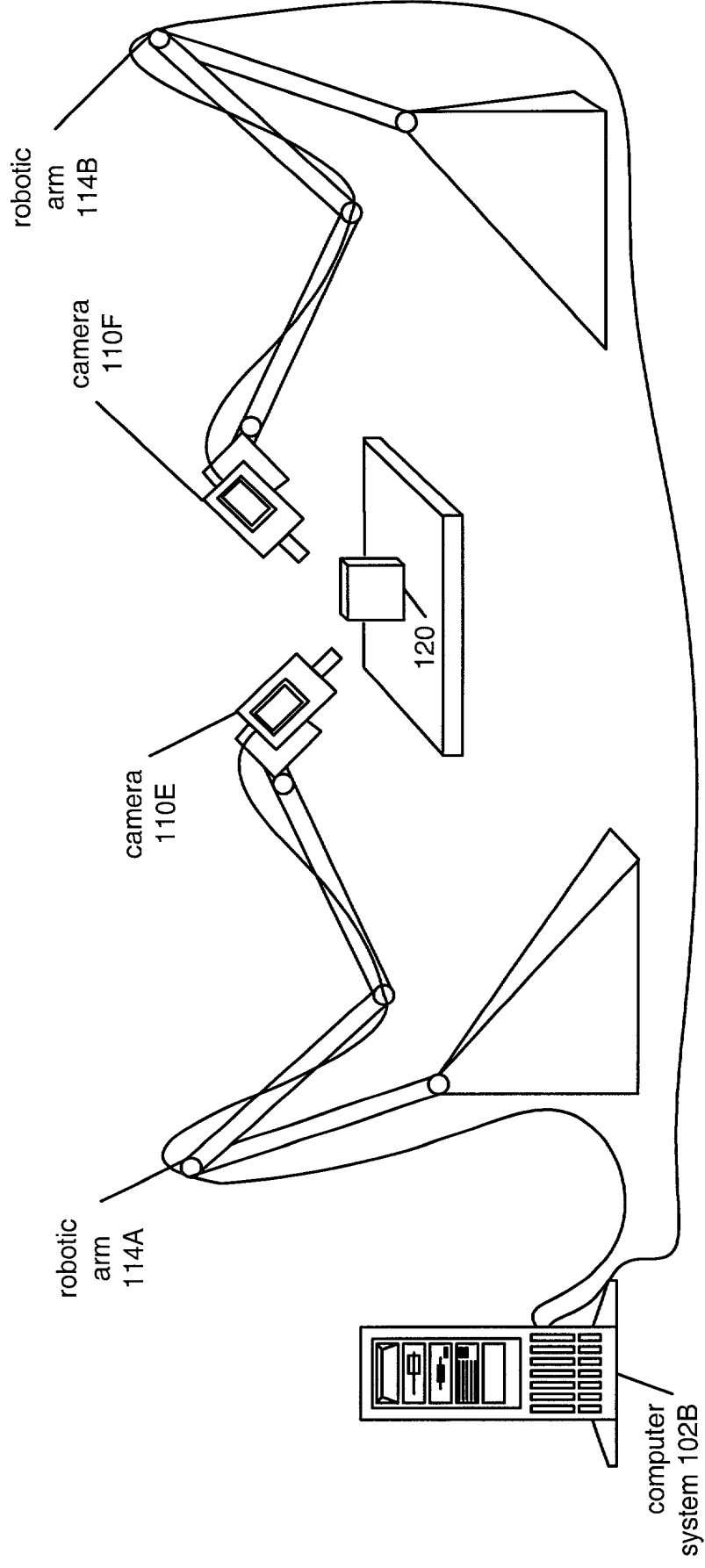


Figure 3B

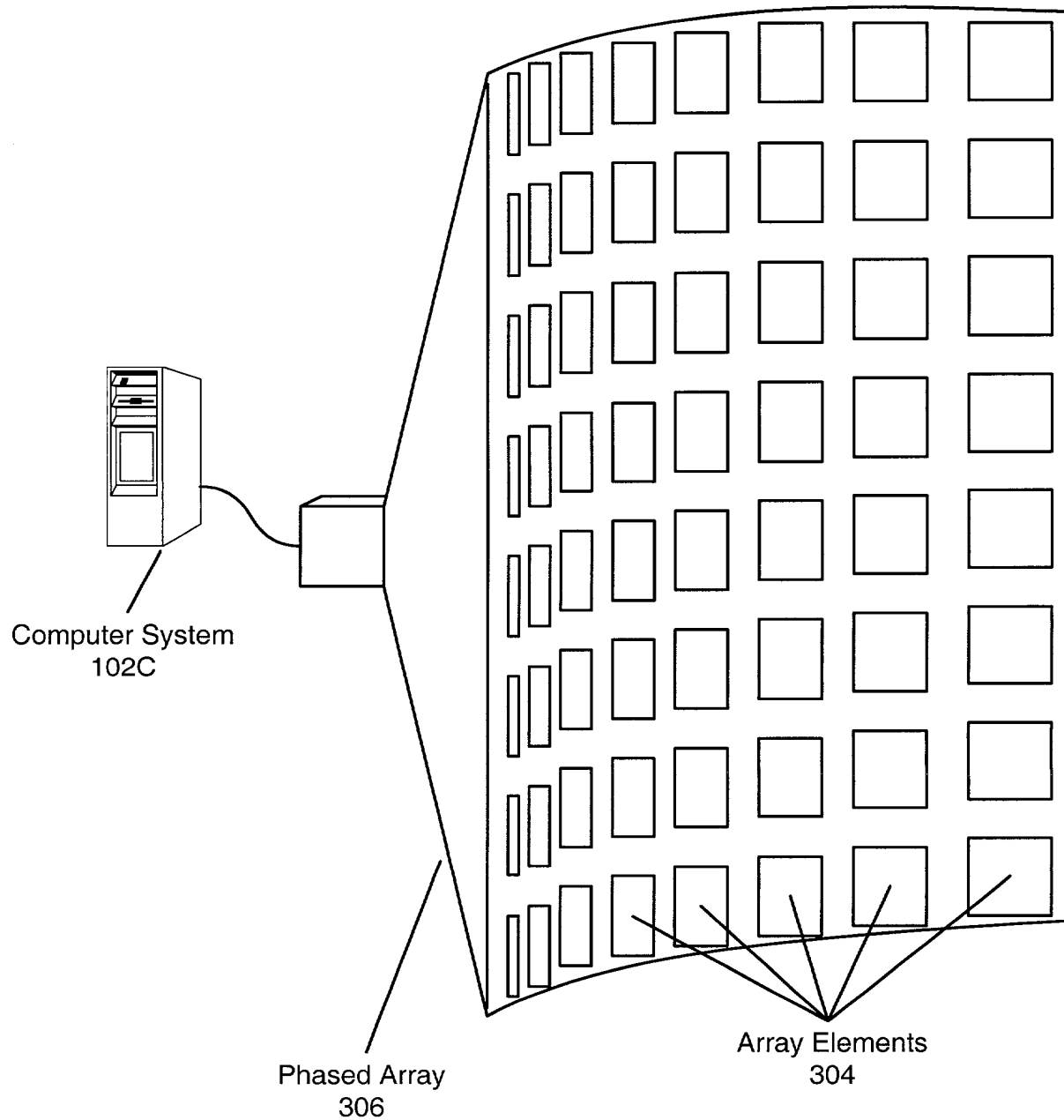


Figure 3C

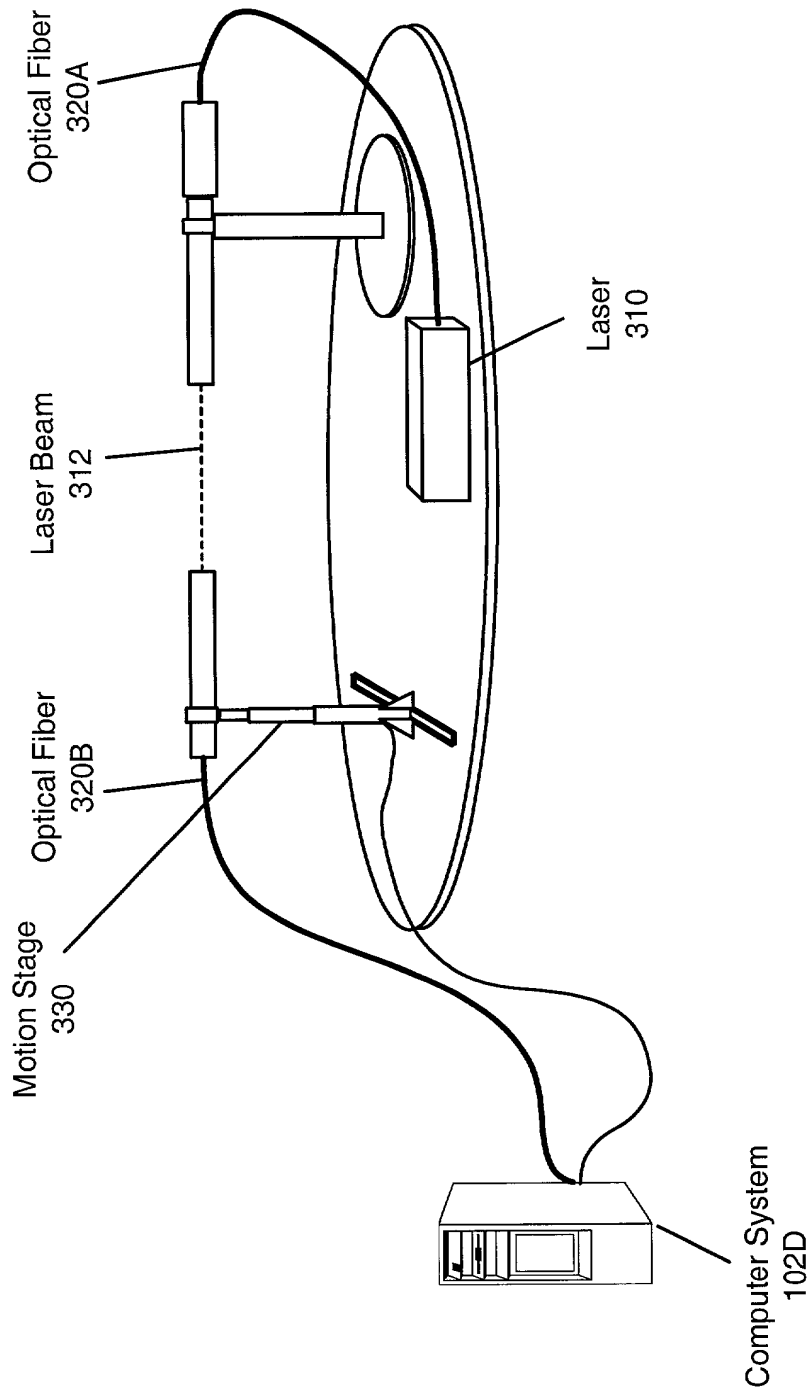
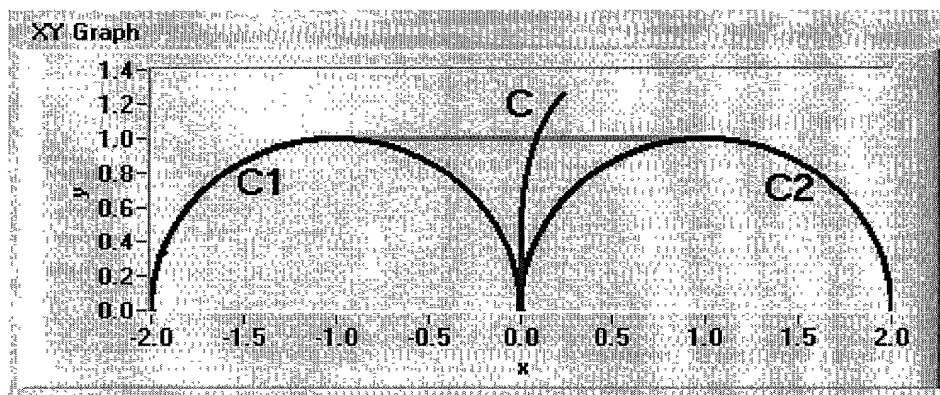


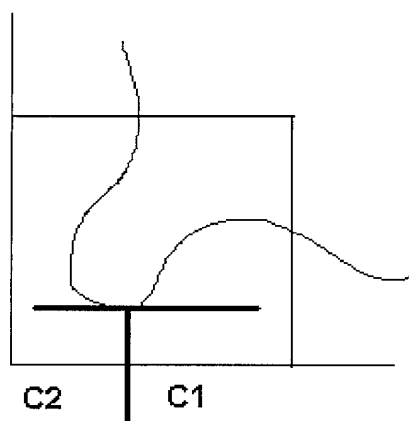
Figure 3D

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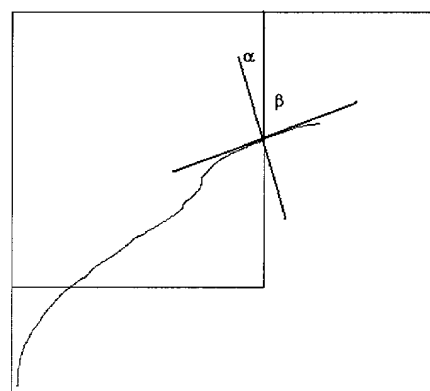
The situation of Lemma 1

Figure 4A



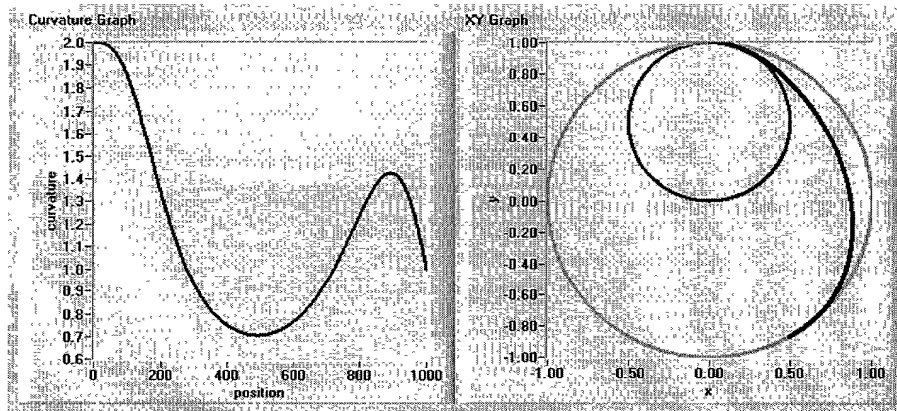
Case (A)

Figure 4B



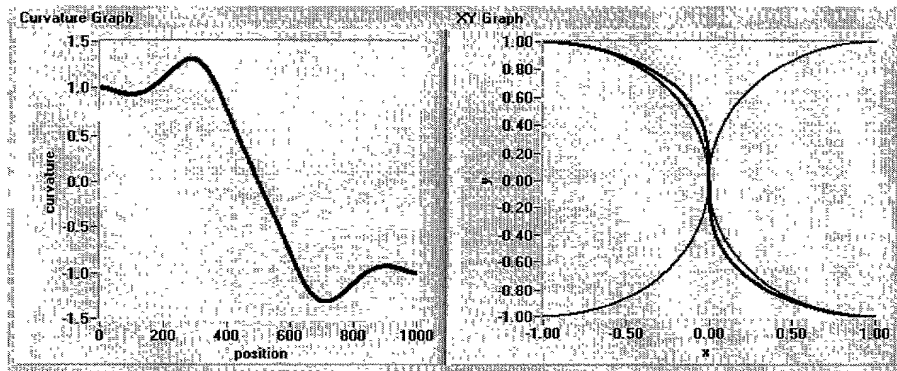
Case (B)

Figure 4C



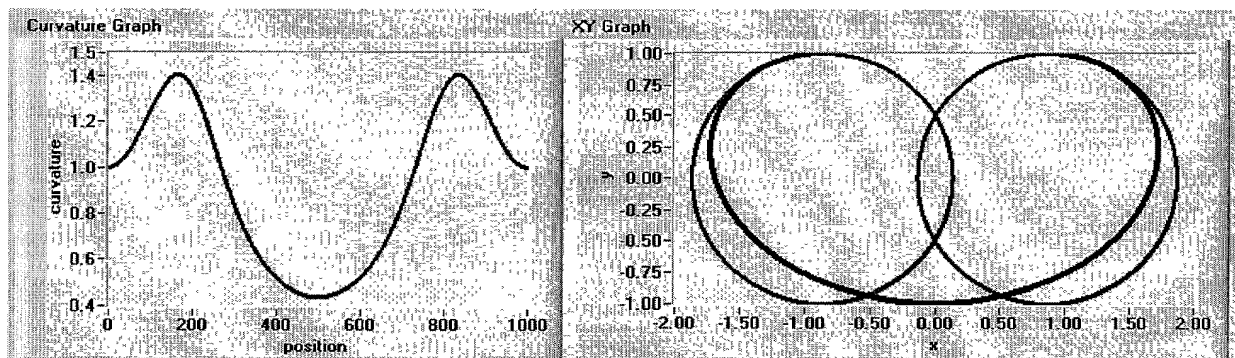
Smooth transition between two circles of different radii.

Figure 4D



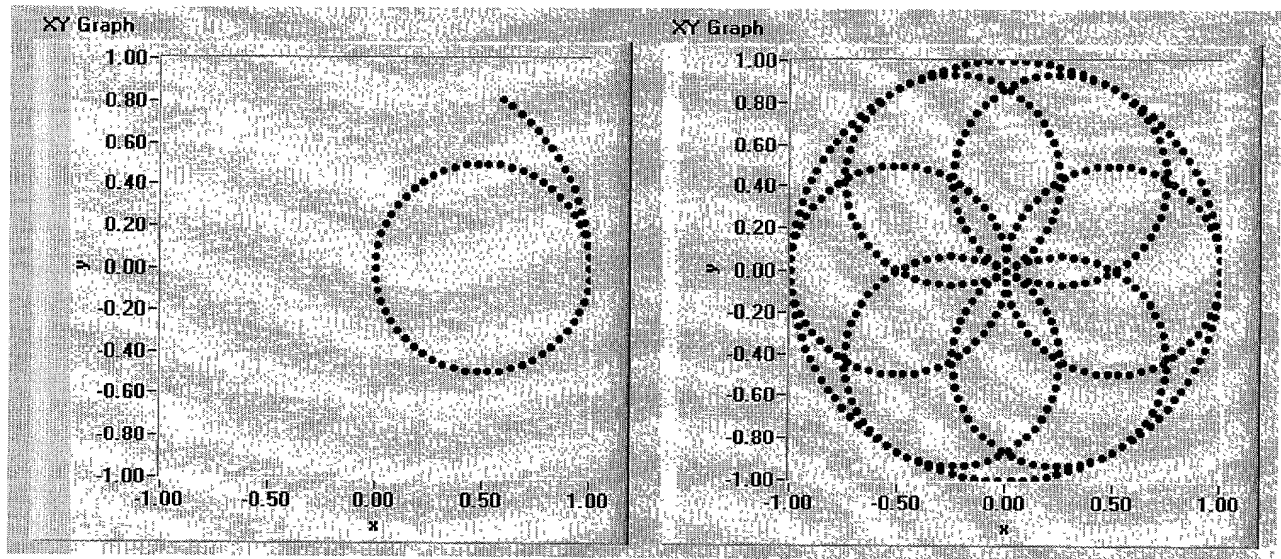
Smooth transition between two circles of same radius.

Figure 4E



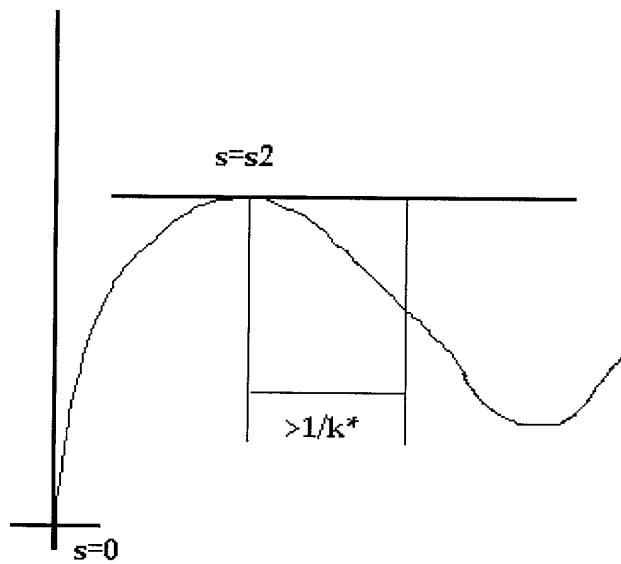
Transition between two unit circles of radius 1. The distance between the circles is  $\sqrt{3}$

Figure 4F



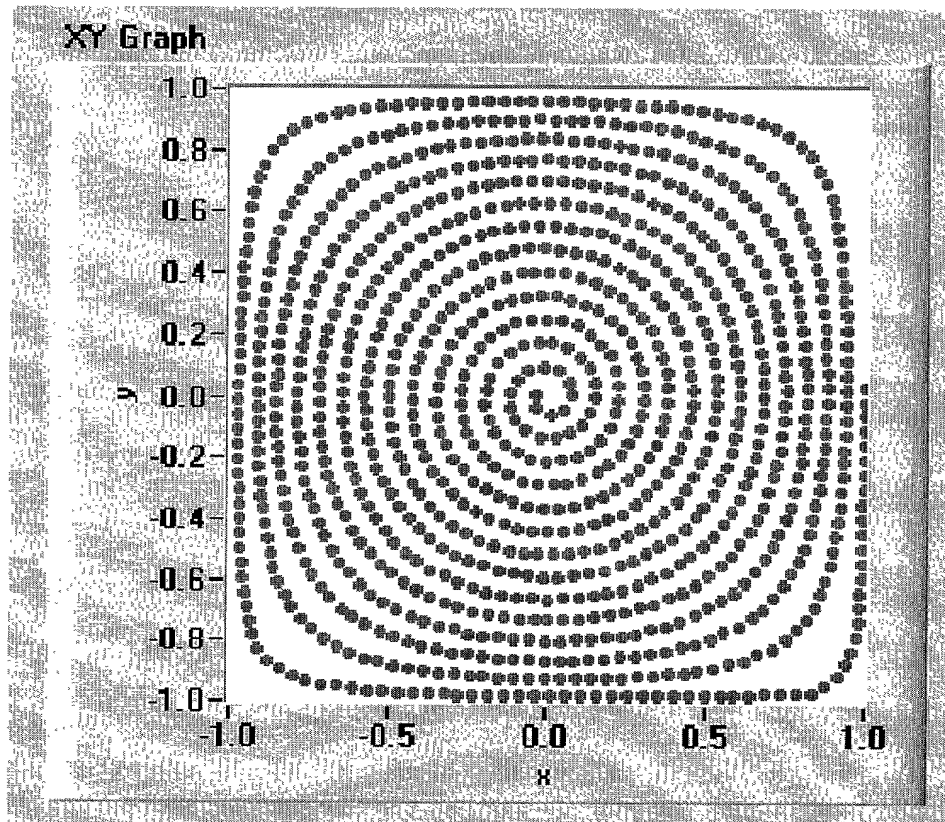
Beginning (left) and completion (right) of a scanning scheme where the curvature is below a certain value

Figure 5A



Construction of  $s_2$  and the subsequent part of the curve

Figure 5B



Conformal Spiral.

Figure 6

FIG. 7

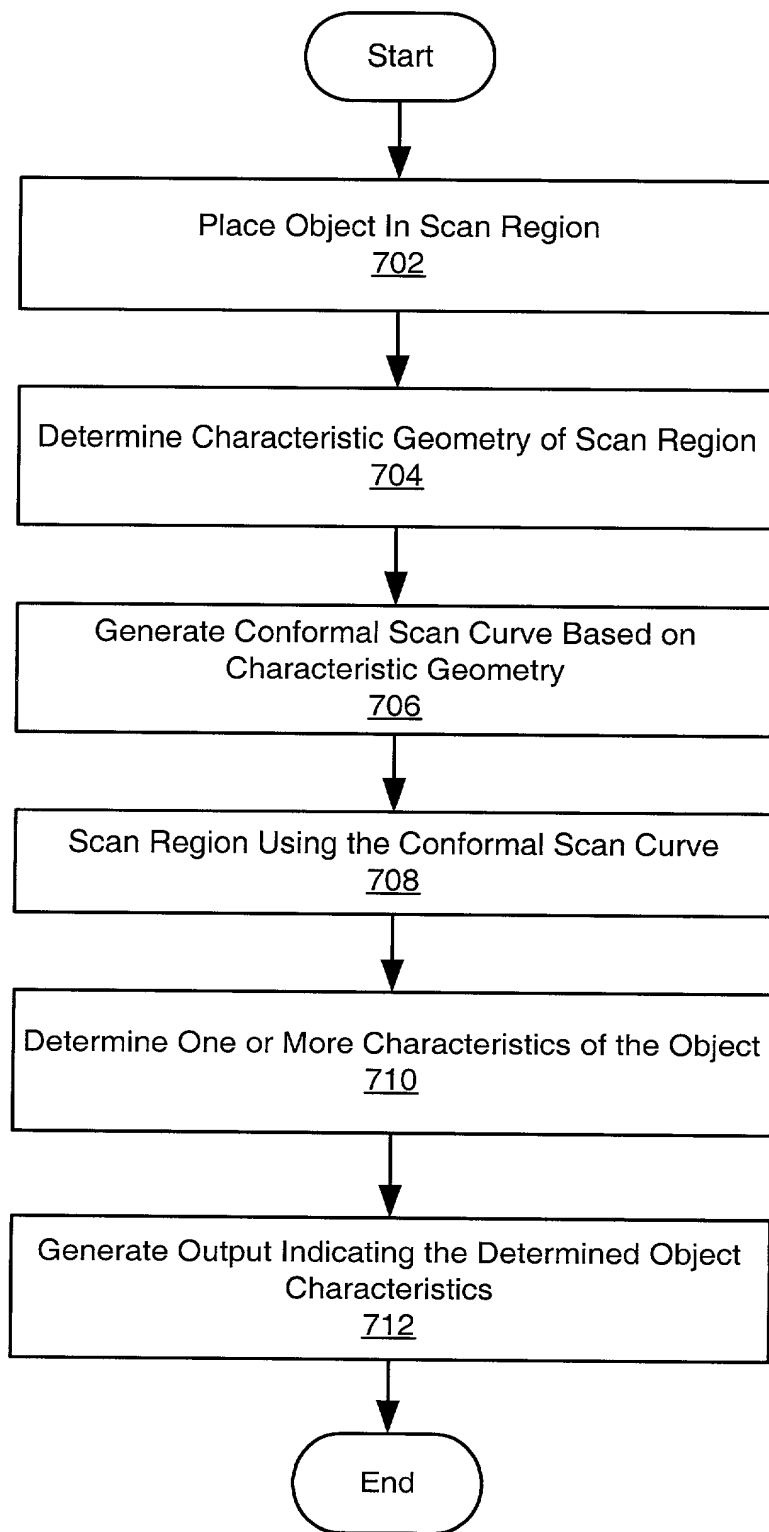
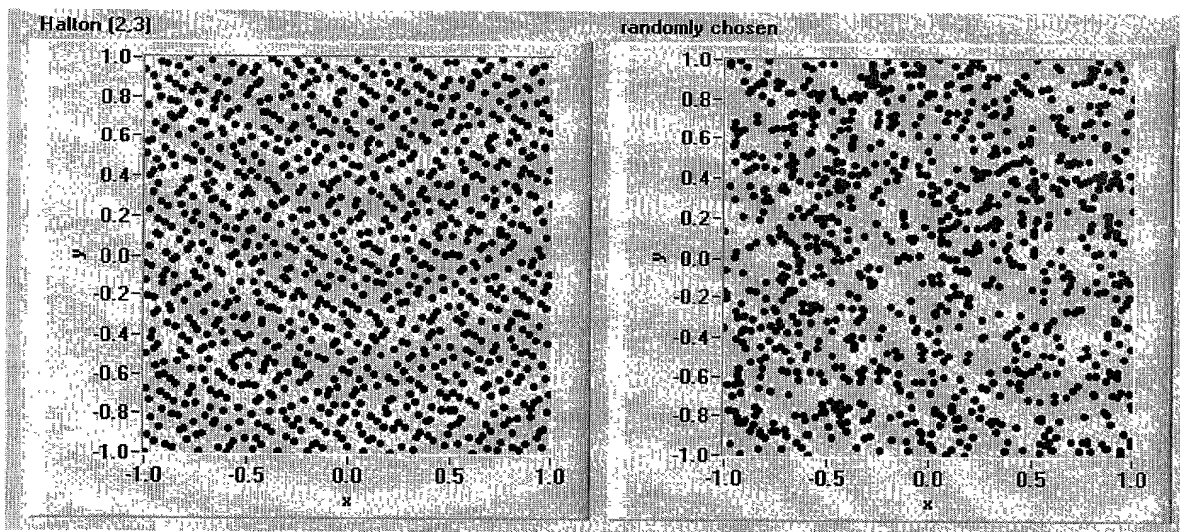


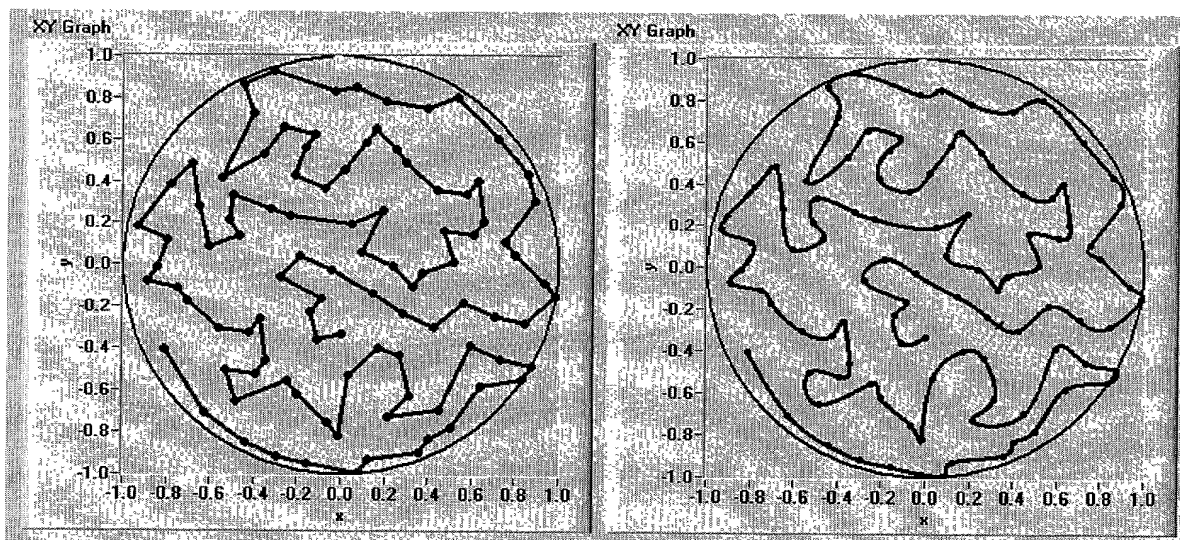
Figure 07

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The first 1000 Halton points (left) and randomly chosen points (right)

Figure 8A



Original solution (left) and splined version (right).

Figure 8B

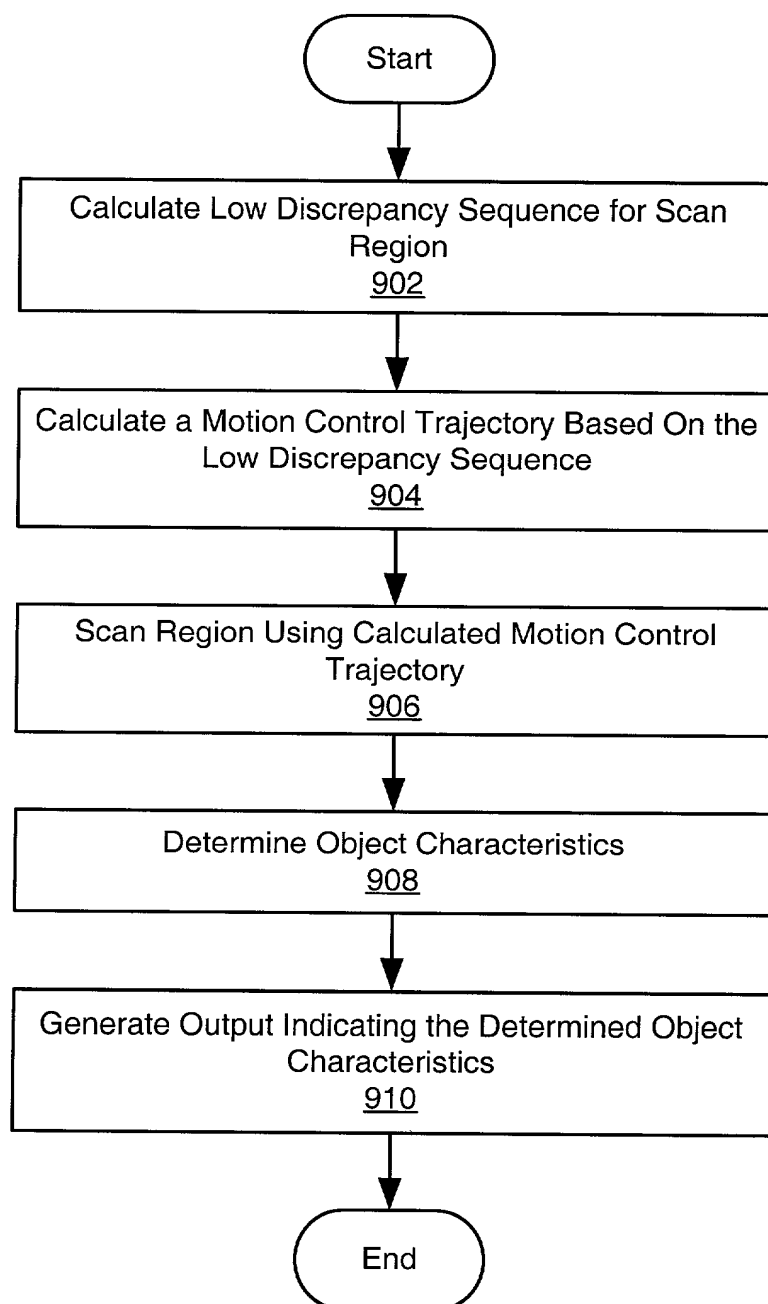
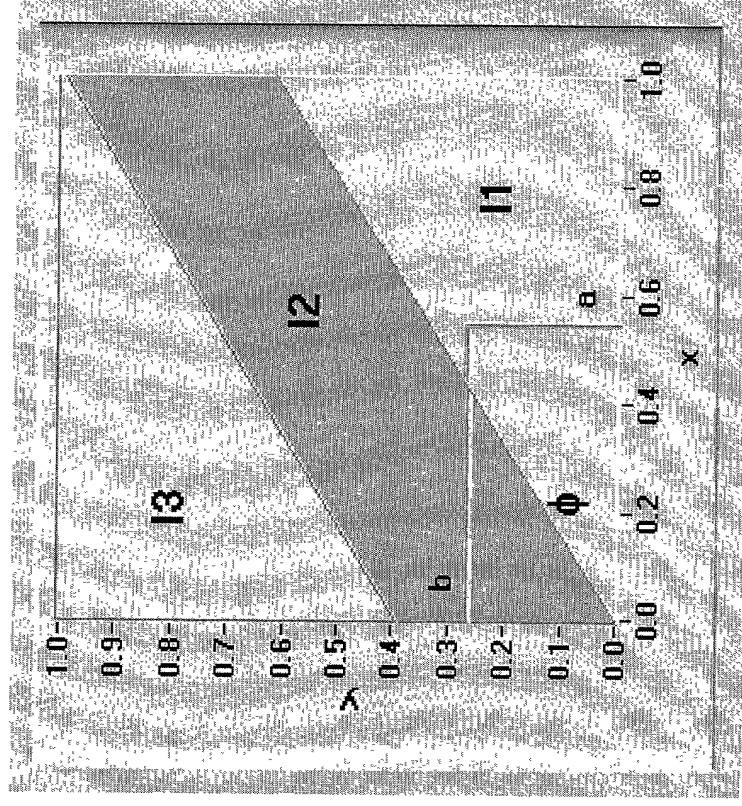
[illegible]

Figure 9



Definition of  $I_1$ ,  $I_2$ , and  $I_3$

Figure 10

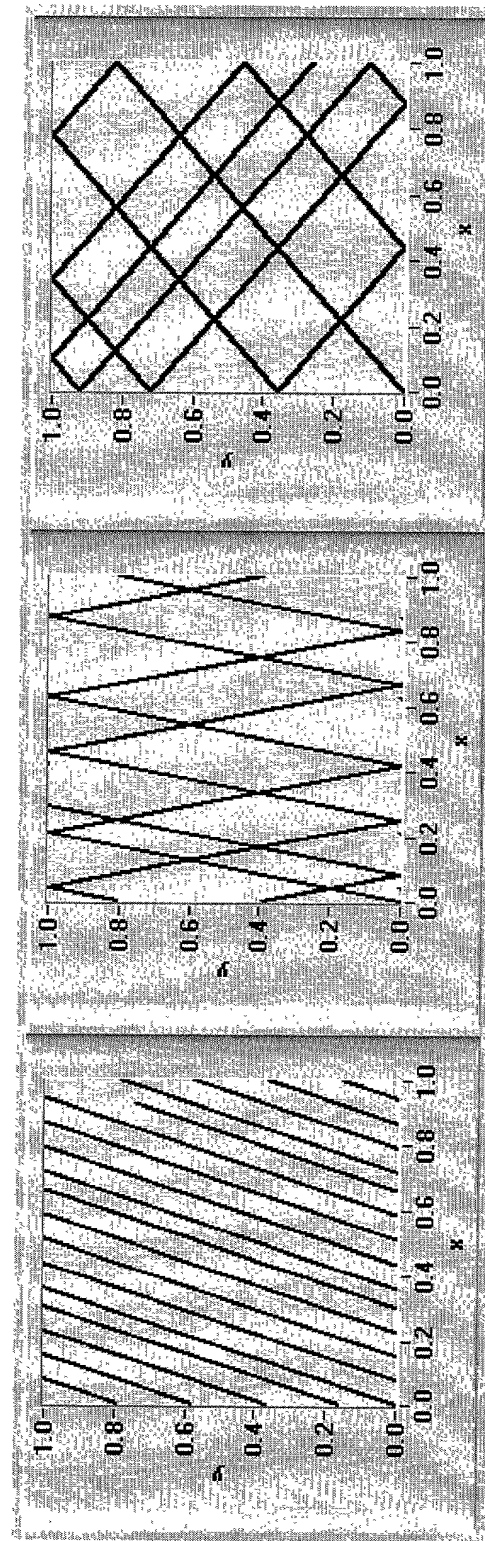


Figure 11A

Figure 11B

Figure 11C

```
graph TD; 1222[Generate Unbounded Low Discrepancy Point  
1222] --> 1224[Apply Boundary Conditions to the Unbounded Low  
Discrepancy Point to Generate a Bounded Low  
Discrepancy Point in a Region  
1224]; 1224 --> 1226{Done?  
1226}; 1226 -- No --> 1222; 1226 -- Yes --> 1228[Store Generated Low Discrepancy Sequence of  
Points Representing a Low Discrepancy Curve in the  
Region  
1228]; 1228 --> 1230[Output Generated Low Discrepancy Sequence of  
Points Representing the Low Discrepancy Curve  
1230];
```

Figure 12A

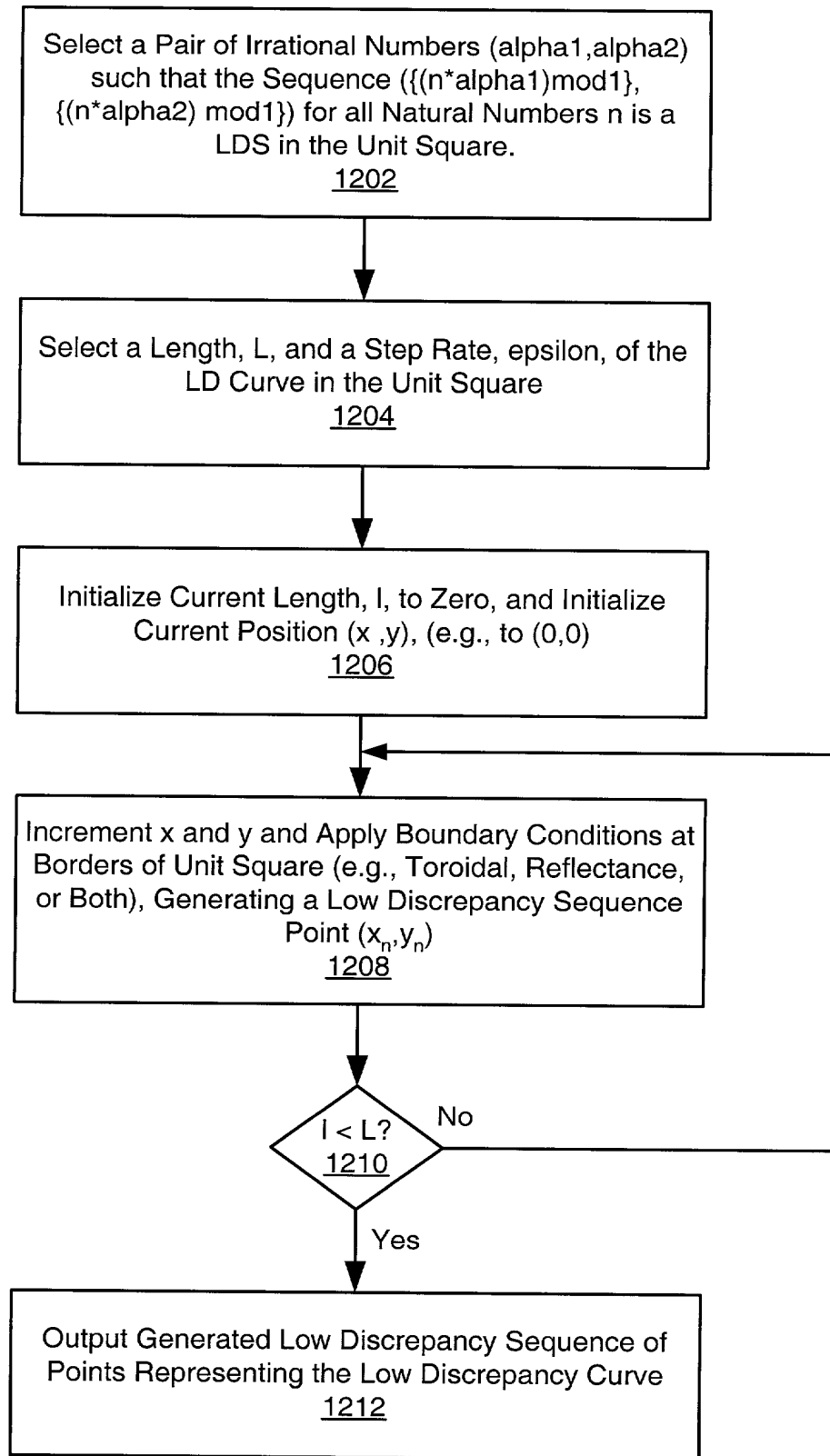
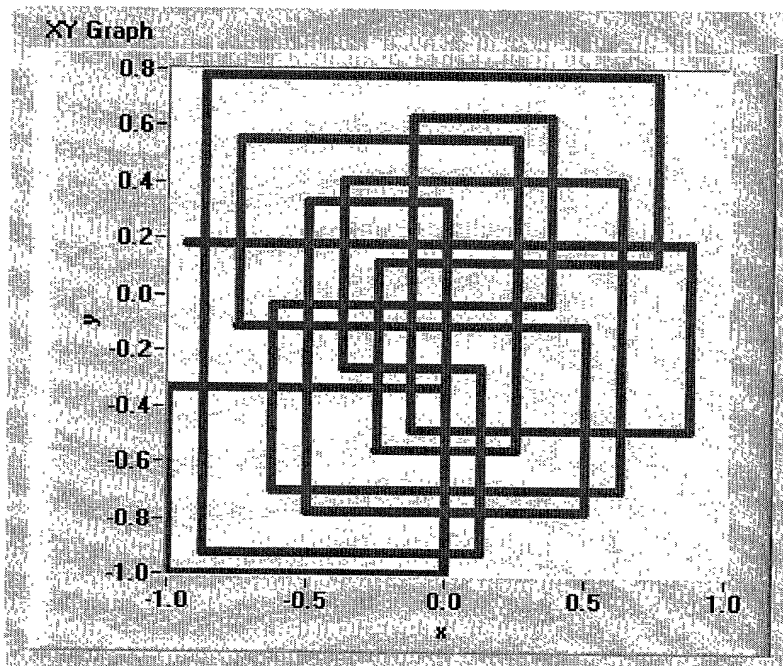


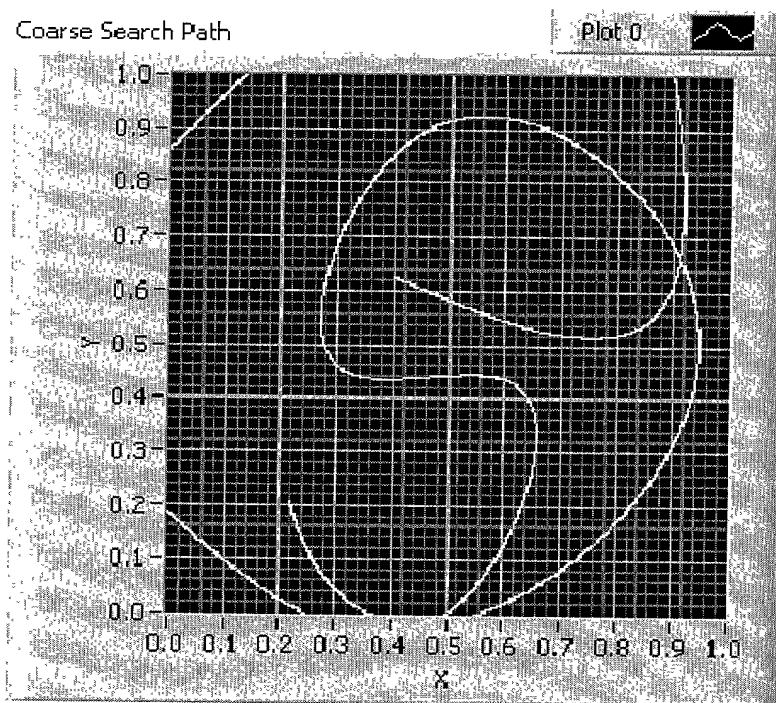
Figure 12B

09076982-060801  
T09090-2869/2860



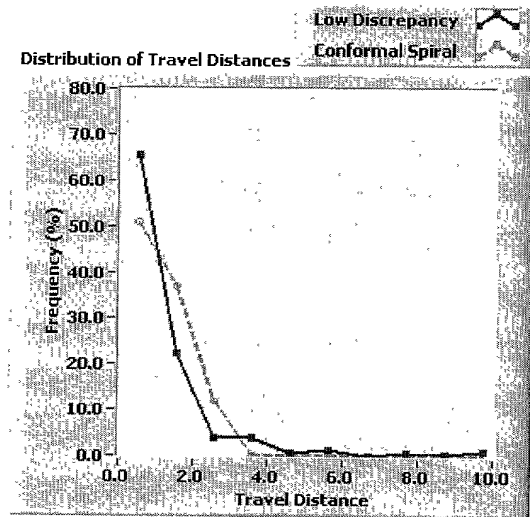
Beginning of a Low Discrepancy Curve based on a specific Halton Sequence in 2d

Figure 13A



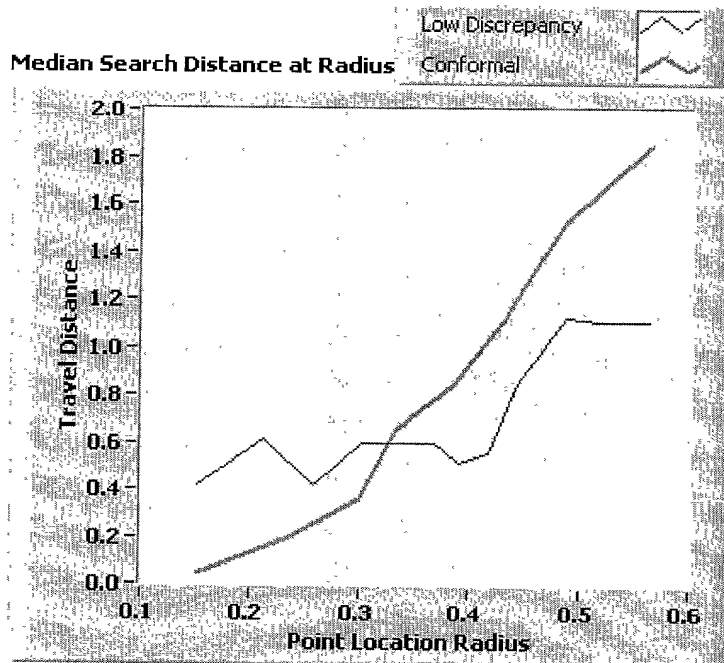
Splined Low Discrepancy Curve coarse search

Figure 13B



Comparison of Conformal Spiral and Low Discrepancy Searching

Figure 13C



Comparison of Travel Distance for Low Discrepancy Search and Conformal Spiral Search

Figure 13D

Country	Year	Population (millions)	Urban population (millions)	Urban population (%)	Population density (per sq km)	Urban population density (per sq km)	Population growth rate (%)	Urban population growth rate (%)	Population growth rate (%)	Urban population growth rate (%)	Population growth rate (%)	Urban population growth rate (%)
Algeria	1980	11.0	4.0	36.4	10.0	10.0	1.5	1.5	1.5	1.5	1.5	1.5
Algeria	1985	11.5	4.5	39.1	10.5	10.5	1.5	1.5	1.5	1.5	1.5	1.5
Algeria	1990	12.0	5.0	41.7	11.0	11.0	1.5	1.5	1.5	1.5	1.5	1.5
Algeria	1995	12.5	5.5	44.0	11.5	11.5	1.5	1.5	1.5	1.5	1.5	1.5
Algeria	2000	13.0	6.0	46.2	12.0	12.0	1.5	1.5	1.5	1.5	1.5	1.5
Algeria	2005	13.5	6.5	48.1	12.5	12.5	1.5	1.5	1.5	1.5	1.5	1.5
Algeria	2010	14.0	7.0	50.0	13.0	13.0	1.5	1.5	1.5	1.5	1.5	1.5
Algeria	2015	14.5	7.5	51.7	13.5	13.5	1.5	1.5	1.5	1.5	1.5	1.5
Algeria	2020	15.0	8.0	53.3	14.0	14.0	1.5	1.5	1.5	1.5	1.5	1.5
Algeria	2025	15.5	8.5	54.8	14.5	14.5	1.5	1.5	1.5	1.5	1.5	1.5
Algeria	2030	16.0	9.0	56.3	15.0	15.0	1.5	1.5	1.5	1.5	1.5	1.5
Algeria	2035	16.5	9.5	57.6	15.5	15.5	1.5	1.5	1.5	1.5	1.5	1.5
Algeria	2040	17.0	10.0	58.8	16.0	16.0	1.5	1.5	1.5	1.5	1.5	1.5
Algeria	2045	17.5	10.5	60.0	16.5	16.5	1.5	1.5	1.5	1.5	1.5	1.5
Algeria	2050	18.0	11.0	61.1	17.0	17.0	1.5	1.5	1.5	1.5	1.5	1.5
Algeria	2055	18.5	11.5	62.2	17.5	17.5	1.5	1.5	1.5	1.5	1.5	1.5
Algeria	2060	19.0	12.0	63.2	18.0	18.0	1.5	1.5	1.5	1.5	1.5	1.5
Algeria	2065	19.5	12.5	64.1	18.5	18.5	1.5	1.5	1.5	1.5	1.5	1.5
Algeria	2070	20.0	13.0	65.0	19.0	19.0	1.5	1.5	1.5	1.5	1.5	1.5
Algeria	2075	20.5	13.5	65.9	19.5	19.5	1.5	1.5	1.5	1.5	1.5	1.5
Algeria	2080	21.0	14.0	66.7	20.0	20.0	1.5	1.5	1.5	1.5	1.5	1.5
Algeria	2085	21.5	14.5	67.4	20.5	20.5	1.5	1.5	1.5	1.5	1.5	1.5
Algeria	2090	22.0	15.0	68.2	21.0	21.0	1.5	1.5	1.5	1.5	1.5	1.5
Algeria	2095	22.5	15.5	68.9	21.5	21.5	1.5	1.5	1.5	1.5	1.5	1.5
Algeria	2100	23.0	16.0	69.6	22.0	22.0	1.5	1.5	1.5	1.5	1.5	1.5
Algeria	2105	23.5	16.5	70.2	22.5	22.5	1.5	1.5	1.5	1.5	1.5	1.5
Algeria	2110	24.0	17.0	70.8	23.0	23.0	1.5	1.5	1.5	1.5	1.5	1.5
Algeria	2115	24.5	17.5	71.4	23.5	23.5	1.5	1.5	1.5	1.5	1.5	1.5
Algeria	2120	25.0	18.0	72.0	24.0	24.0	1.5	1.5	1.5	1.5	1.5	1.5
Algeria	2125	25.5	18.5	72.6	24.5	24.5	1.5	1.5	1.5	1.5	1.5	1.5
Algeria	2130	26.0	19.0	73.1								

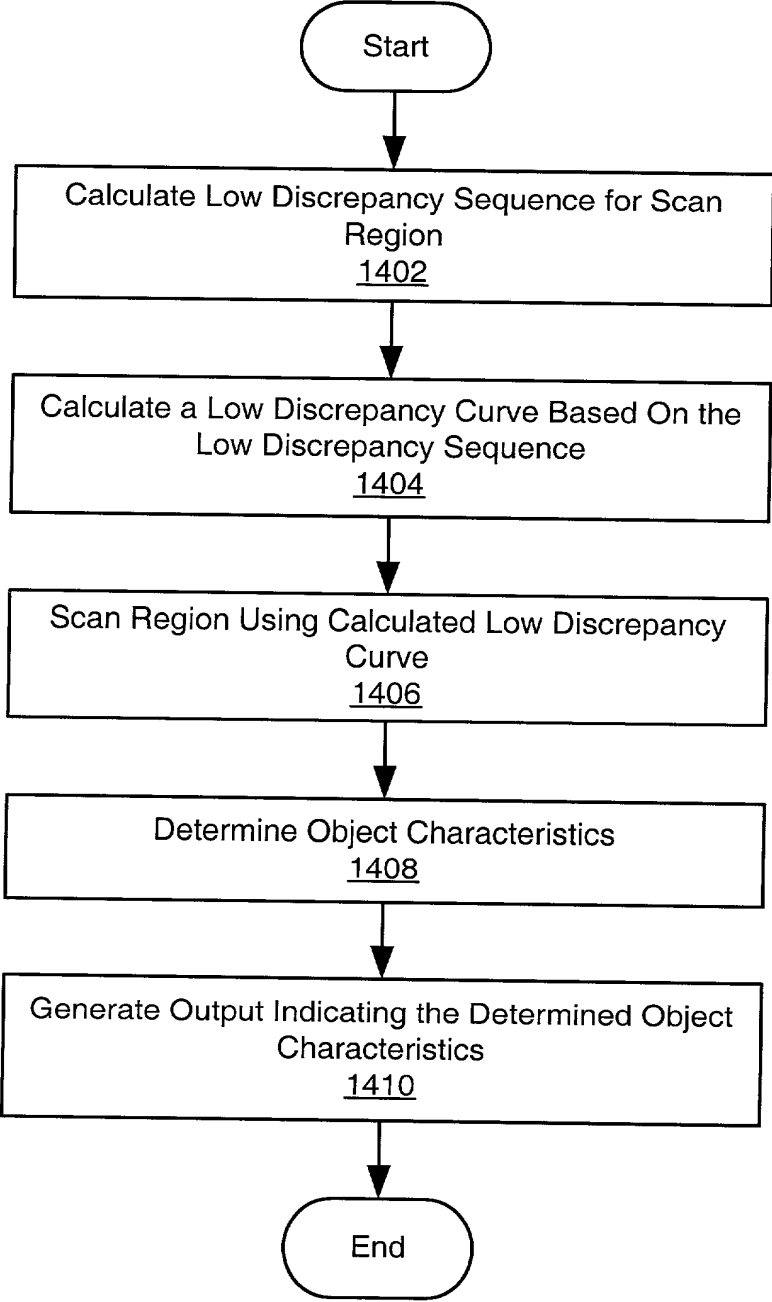
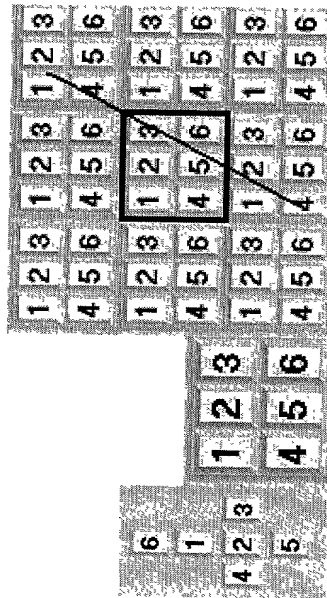
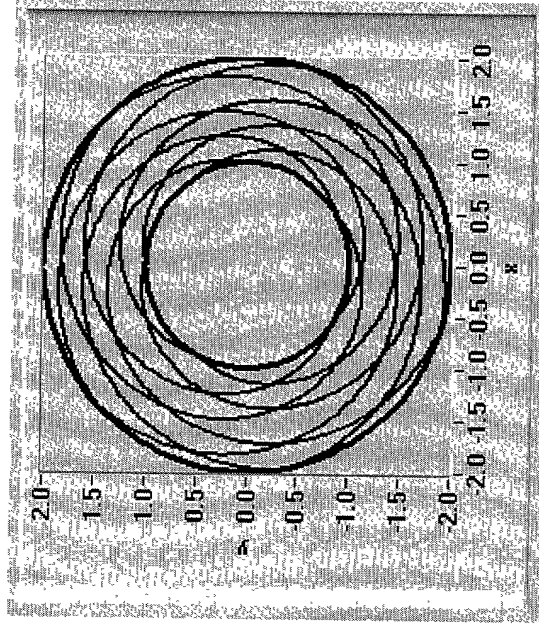


Figure 14



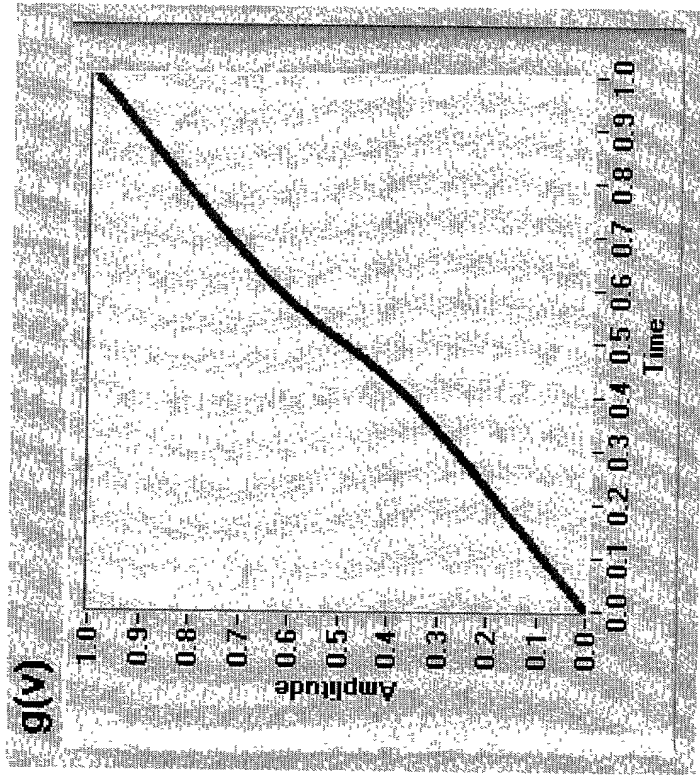
Tiling of the plane and relation to the surface of the unit cube

Figure 15A



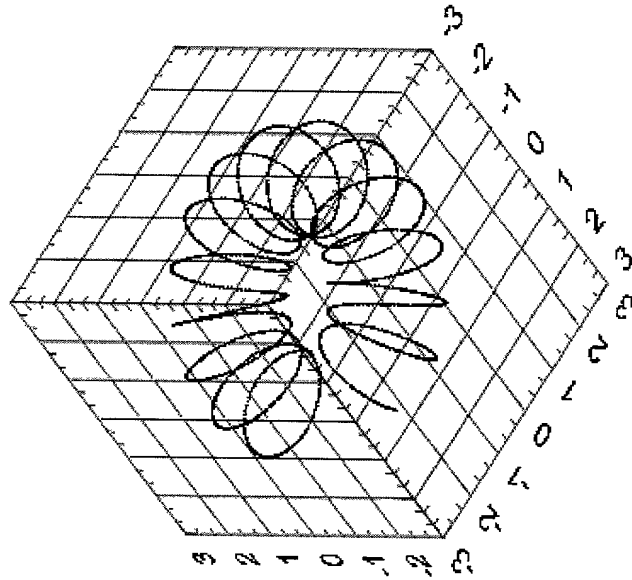
Low-discrepancy curve in a ring

Figure 15B



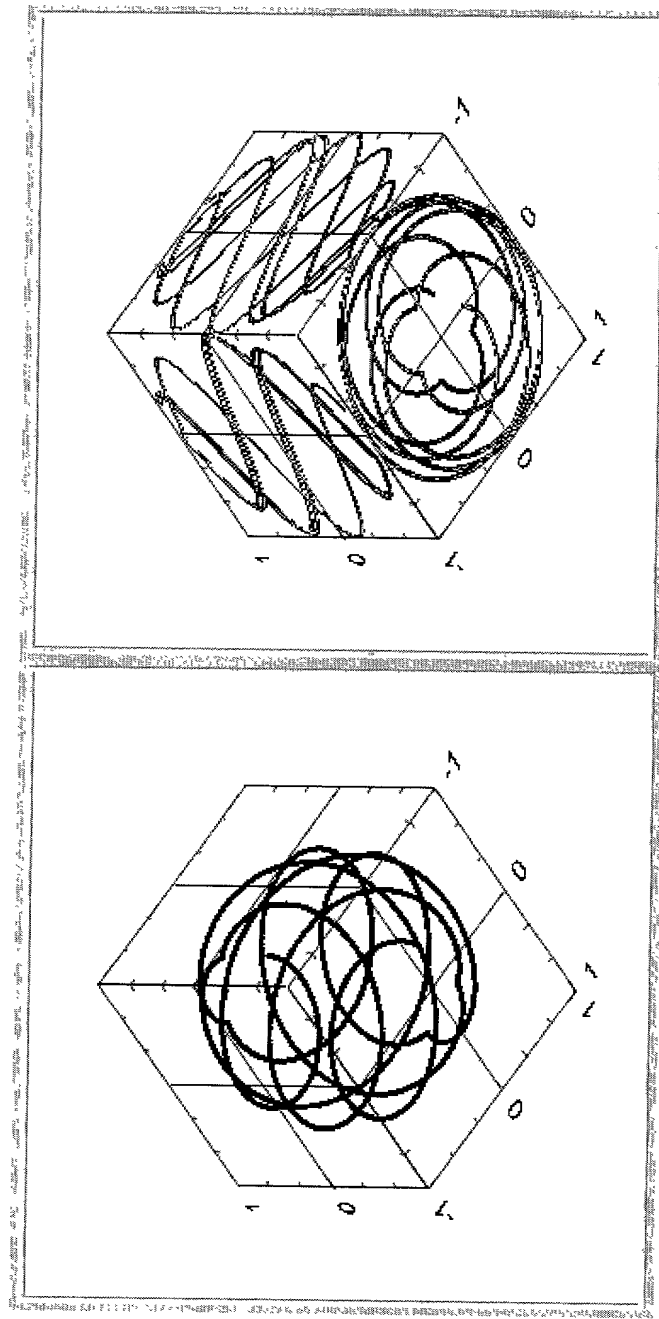
Low Discrepancy Preserving Mapping Function

Figure 15C



Low-discrepancy curve filling the surface of a torus

Figure 15D



Low-discrepancy curve on a sphere  
(left) and projections (right)

Figure 16

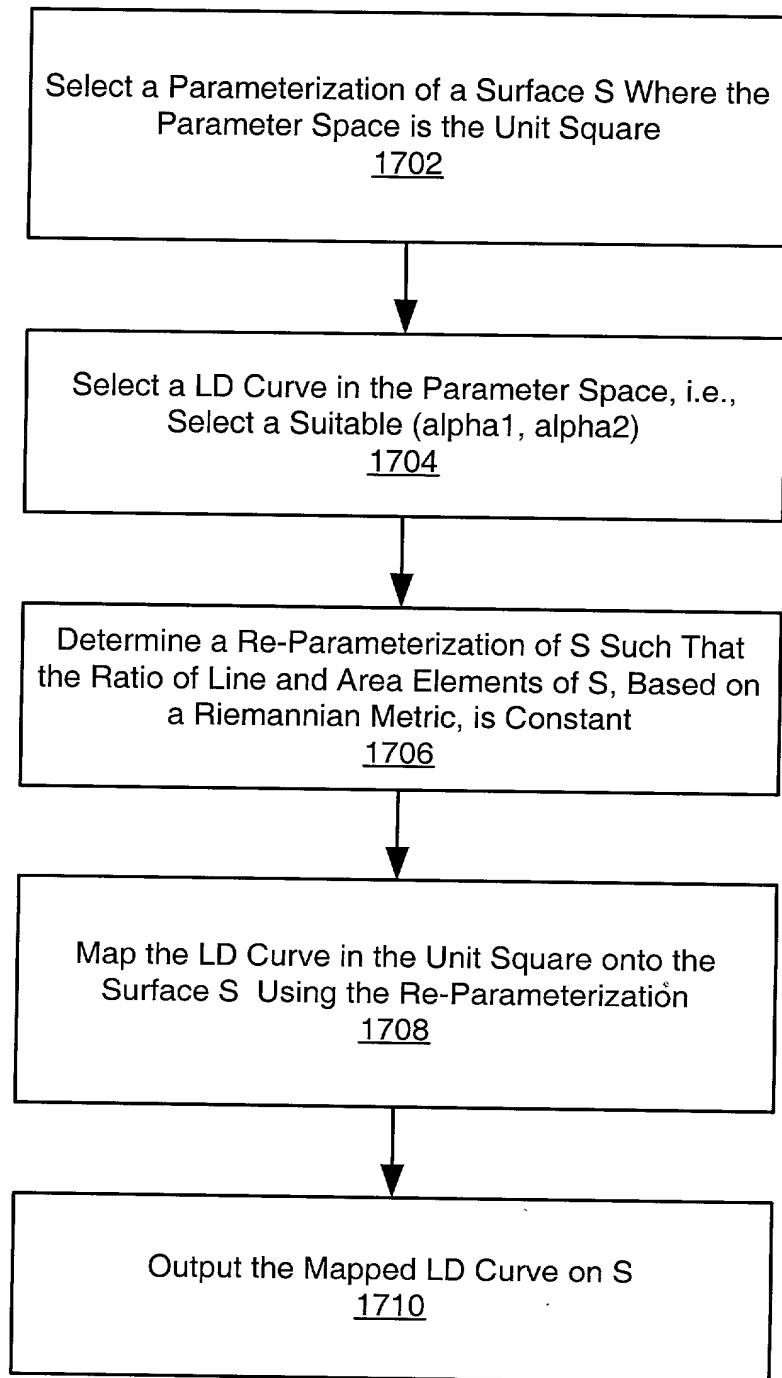
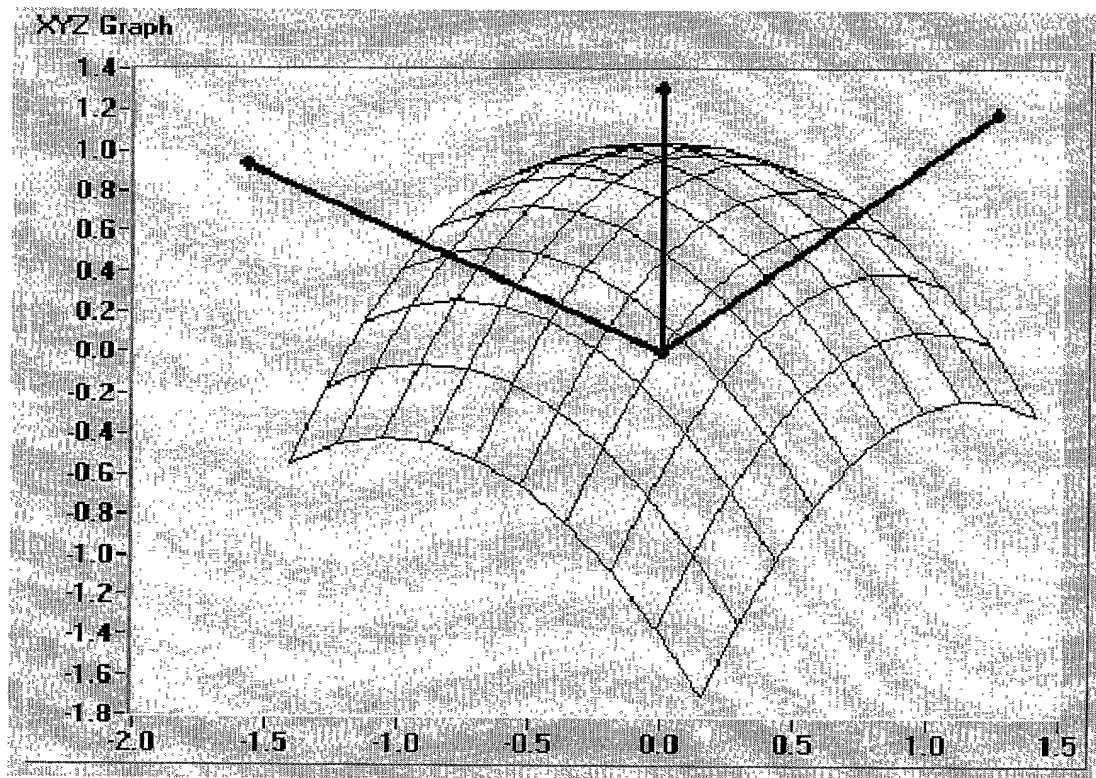
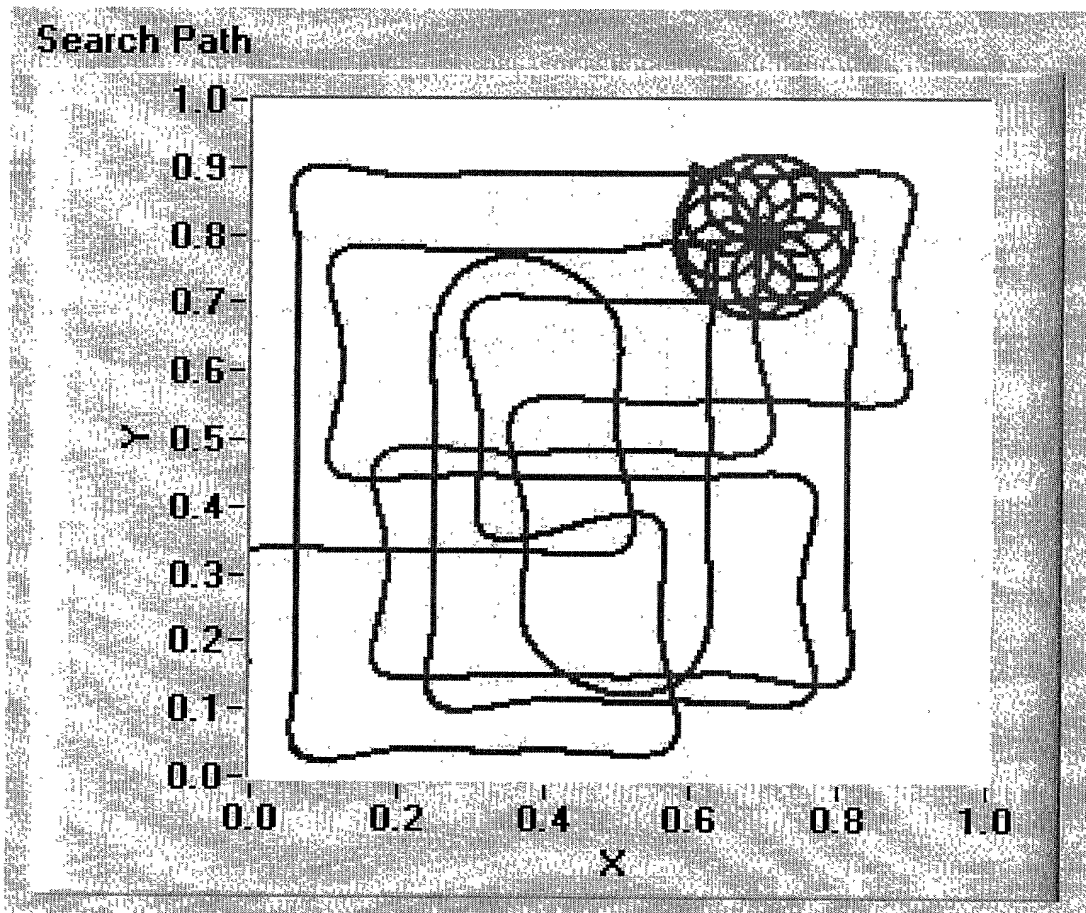


Figure 17



Surfaces can be scanned efficiently when the term low discrepancy sequence/ curve can be generalized, e.g. based on metrics on the surface.

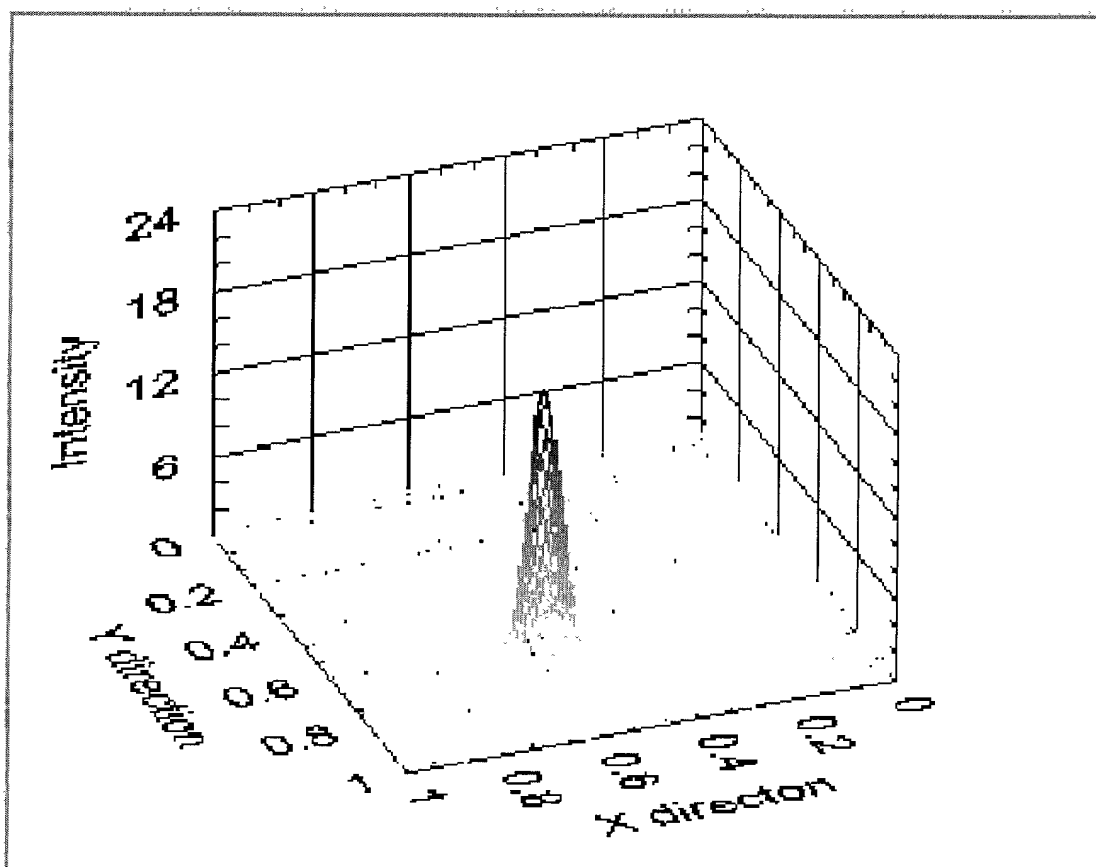
Figure 18



Splined Low Discrepancy Curve coarse search with refined final approach

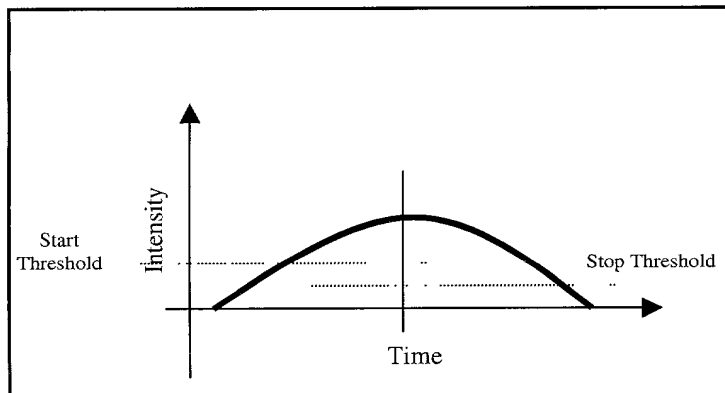
Figure 19

# Intensity Field Distribution in Search Area

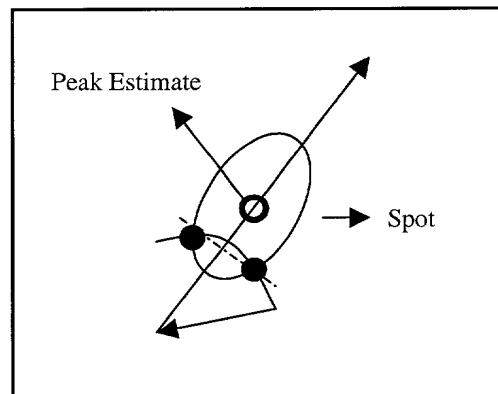


Beam intensity distribution in search area

Figure 20



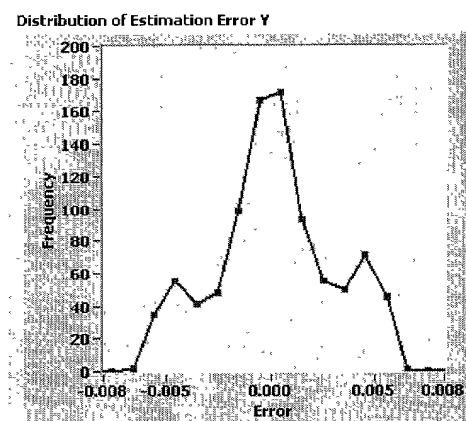
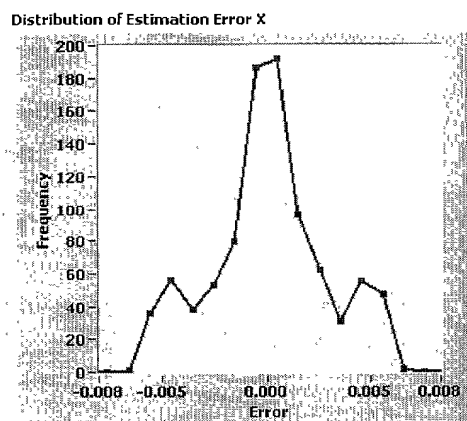
Location of the Peak



Initial Final Approach Move

Figure 21A

Figure 21B



Error distribution of the estimated peak X coordinate error (left) and Y coordinate error (right)

Figure 21C

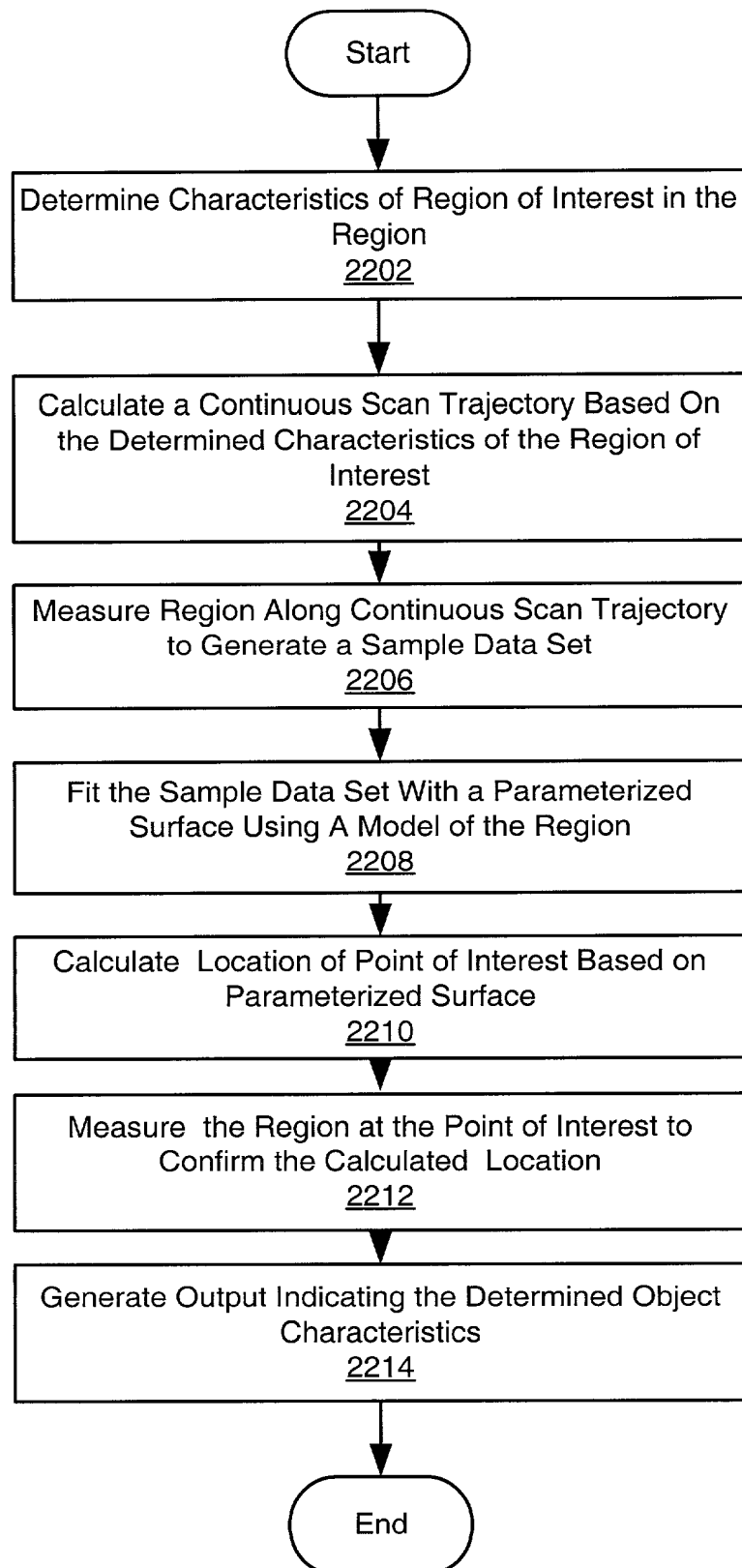


Figure 22

FIG. 23

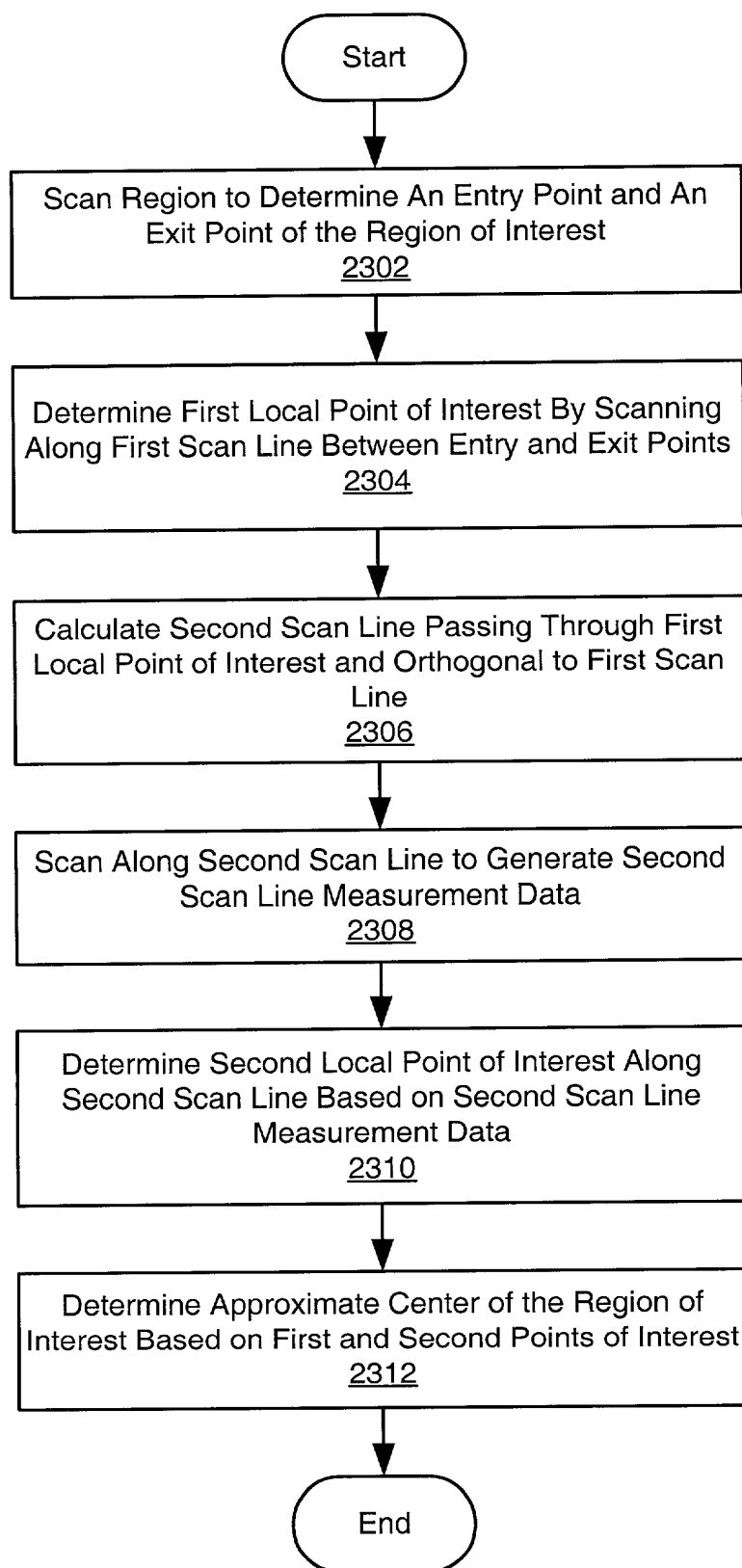


Figure 23